

4.5 PSP Cover Sheet (Attach to the front of each proposal)

Proposal Title: Banta-Carbona Irrigation District Positive Barrier Fish Screen
 Applicant Name: Banta-Carbona Irrigation District
 Mailing Address: P. O. Box 299 - Tracy, CA 95378-0299
 Telephone: (209) 835-4670
 Fax: (209) 835-2009
 Email: bcid@inreach.com

Amount of funding requested: \$ 1,694,375 for two years.
 These funds cover the change from salmonoid criteria to delta smelt criteria for the project.
 Indicate the topic for which you are applying (check only one box).

- | | |
|---|---|
| <input checked="" type="checkbox"/> Fish Passage/Fish Screens | <input type="checkbox"/> Introduced Species |
| <input type="checkbox"/> Habitat Restoration | <input type="checkbox"/> Fish Management/Hatchery |
| <input type="checkbox"/> Local Watershed Stewardship | <input type="checkbox"/> Environmental Education |
| <input type="checkbox"/> Water Quality | |

Does the proposal address a specified Focused Action? x yes no

What county or counties is the project located in? San Joaquin County

Indicate the geographic area of your proposal (check only one box):

- | | |
|--|---|
| <input type="checkbox"/> Sacramento River Mainstem | <input type="checkbox"/> East Side Trib: <u> </u> |
| <input type="checkbox"/> Sacramento Trib: <u> </u> | <input type="checkbox"/> Suisun Marsh and Bay |
| <input checked="" type="checkbox"/> San Joaquin River Mainstem | <input type="checkbox"/> North Bay/South Bay: <u> </u> |
| <input type="checkbox"/> San Joaquin Trib: <u> </u> | <input type="checkbox"/> Landscape (entire Bay-Delta watershed) |
| <input checked="" type="checkbox"/> Delta: <u>South</u> | <input type="checkbox"/> Other: <u> </u> |

Indicate the primary species which the proposal addresses (check all that apply):

- | | |
|---|---|
| <input checked="" type="checkbox"/> San Joaquin and East-side Delta tributaries fall-run chinook salmon | <input checked="" type="checkbox"/> Spring-run chinook salmon |
| <input checked="" type="checkbox"/> Winter-run chinook salmon | <input checked="" type="checkbox"/> Fall-run chinook salmon |
| <input checked="" type="checkbox"/> Late-fall run chinook salmon | <input type="checkbox"/> Longfin smelt |
| <input checked="" type="checkbox"/> Delta smelt | <input checked="" type="checkbox"/> Steelhead trout |
| <input checked="" type="checkbox"/> Splittail | <input type="checkbox"/> Striped bass |
| <input type="checkbox"/> Green sturgeon | <input checked="" type="checkbox"/> All chinook species |
| <input type="checkbox"/> Migratory birds | <input checked="" type="checkbox"/> All anadromous salmonids |
| <input type="checkbox"/> Other: <u> </u> | |

Specify the ERP strategic objective and target (s) that the project addresses. Include page numbers from January 1999 version of ERP Volume I and II:

Reduce fish entrainment on the San Joaquin River by screening 50% by volume of diversions. Target 1, page 402 of Volume II of the ERPP.

Indicate the type of applicant (check only one box):

- | | |
|---|---|
| <input type="checkbox"/> State agency | <input type="checkbox"/> Federal agency |
| <input type="checkbox"/> Public/Non-profit joint venture | <input type="checkbox"/> Non-profit |
| <input checked="" type="checkbox"/> Local government/district | <input type="checkbox"/> Private party |
| <input type="checkbox"/> University | <input type="checkbox"/> Other: _____ |

Indicate the type of project (check only one box):

- | | |
|-------------------------------------|--|
| <input type="checkbox"/> Planning | <input checked="" type="checkbox"/> Implementation |
| <input type="checkbox"/> Monitoring | <input type="checkbox"/> Education |
| <input type="checkbox"/> Research | |

By signing below, the applicant declares the following:

- 1.) The truthfulness of all representations in their proposal;
- 2.) The individual signing the form is entitled to submit the application on behalf of the applicant (if the applicant is an entity or organization); and
- 3.) The person submitting the application has read and understood the conflict of interest and confidentiality discussion in the PSP (Section 2.4) and waives any and all rights to privacy and confidentiality of the proposal on behalf of the applicant, to the extent as provided in the Section.

David Weisenberger

Printed name of applicant

David Weisenberger

Signature of applicant

Banta-Carbona Irrigation District Positive Barrier Fish Screen

Banta-Carbona Irrigation District
P.O. Box 299
Tracy, California 95378-0299

Telephone: 209-835-4670
Fax: 209-835-2009
E-mail: BCID@inreach.com

Public - Special District - Non-Profit
Tax I.D.: 94-1734809

Project Manager:
David Weisenberger, General Manager
Banta-Carbona Irrigation District
P.O. Box 299
Tracy, California 95378-0299

Telephone: 209-835-4670
Fax: 209-835-2009
E-mail: BCID@inreach.com

Participants:

U.S. Fish and Wildlife Service – CVPIA Anadromous Fish Restoration Program
California Department of Fish and Game – Prop 204 Funds
CALFED and Metropolitan Water District - Category III Funds
U.S. Bureau of Reclamation – CVPIA Restoration Fund

RFP Project Group Type: Implementation

Executive Summary

Banta-Carbona Irrigation District Positive Barrier Fish Screen

Applicant: Banta-Carbona Irrigation District
P.O. Box 299
Tracy, California 95378-0299

Phone: 209-835 4670
Fax: 209-835-2009
E-Mail: BCID@inreach.com

Banta-Carbona Irrigation District holds water rights dating back to the early 1900s for the diversion of 200 plus cfs from the San Joaquin river at Mile 63.5. With the exception of a five-year period between 1971 and 1976, the diversion canal has had no fish screens. The primary source of water delivered to the District's users comes from the San Joaquin River. This water is delivered to the system from Pumping Plant No. 1, located at the end of a 6,000-foot river diversion canal. The District supplements San Joaquin River water with water diverted from the Delta-Mendota Canal. Due to system restrictions, this secondary source is available only to upper parts of the distribution system.

The proposed project will be a vertical Vee-screen at the entrance to BCID's intake channel at its confluence with the lower San Joaquin River. The project was selected from twelve potential alternatives in a \$46,000 feasibility study conducted by Montgomery Watson of Sacramento in 1995 and a supplemental feasibility study completed in March 1999 by Montgomery Watson, Americas, Inc.

The anticipated benefits will be to the anadromous fishery, primarily the remnant fall run Chinook Salmon and Delta Smelt, but will also protect other anadromous and fresh water species endemic to the Sacramento-San Joaquin Rivers Delta. A fish screen on the Intake Channel will protect runs to three major San Joaquin River watersheds: the Stanislaus, Tuolumne and Merced Rivers. Screening the next large diverter will protect runs only to the Merced River. The Central valley, including the San Joaquin River, supports several species of anadromous fish including: chinook salmon, steelhead trout, American shad, sturgeon, and striped bass. Through consultation with the Department of Fish and Game and U.S. Fish and Wildlife Service, chinook salmon was accepted as the target species but now USFWS feels that Delta Smelt should be the target species for establishing screening criteria for this project in that the diversion is within the legal definition of the Delta. Although Delta smelt have not been found above Mossdale (River mile 56), the diversion is located within the fringes of the designated critical habitat area. Thus the new selected alternative will meet Delta Smelt screening criteria as far as the screening area of the facility and its approach velocities are concerned. The by-pass pumping system will be evaluated for its ability to handle Delta Smelt if any ever show up at the facility.

BCID started this project during 1995 arranging for funding of a feasibility study conducted by the engineering firm of Montgomery Watson. As a result of this study the District began seeking funding for a proposed Vee Screen fish screen for anadromous fish screening criteria, and to date has arranged for \$3,910,750 to design, construct, and maintain the facility. Now with the requirement to design and build a facility that meets delta smelt approach velocity criteria an additional \$1,694,375 is needed in order to assure a completed project.

The following is a timeline of activities.

	1999	1999	2000	2000	2000	2000-2001
	3rd Qtr.	4th Qtr.	1st Qtr.	2nd Qtr.	3rd Qtr.	4th-4th Qtr.
1. Complete financing arrangements						
2. Complete 30% design						
3. Final Design						
4. Permitting/Environmental documents						
5. Bidding period						
6. Construction						

BCID believes that construction of a fish screen on its intake channel would be the initiation of an incremental process, by fishery and agricultural interests, to protect fish species beginning at the mouth of the San Joaquin River and working toward the tributary headwaters. And, because of its location, the most important place to begin the protection for, and increase of, the fall-run chinook salmon on the San Joaquin River watershed. This protection would be of immense value, particularly in drought years, as the District's diversion has the potential ability to divert a considerable amount of water relative to what would be in the river during a drought. Thus, the District feels that this proposal is consistent with CALFED goals and is deserving of funding by CALFED.

ITEM	Estimated Cost
	(2000 \$)
Fish Screen Structure	\$2,903,000.00
Bypass System	\$315,000.00
Fish Return Pipeline and River Outlet	\$358,000.00
Electrical and Control	\$354,000.00
Mobilization and Demobilization	\$270,000.00
General Conditions, Bonds, and Insurance	\$178,000.00
Subtotal Construction Cost	\$4,378,000.00
Engineering, Administration, Environmental Permitting	\$1,227,000.00
Estimated Total Project Cost	\$5,605,000.00

This proposal requests additional funding for design and construction of the fish screen facility to meet the new requirements of the USFWS. The amount of money requested is \$1,694,375. The BCID will be operating the fish screen, providing daily maintenance and monitoring of the facility. It will be responsible for monitoring the fish screen's operation and providing status reports to the Department of Fish and Game.

BCID is 76 years old and is in good financial condition. BCID's General Manager is the person responsible for coordinating the development of this project. In addition, the District has hired Montgomery Watson, a leader in fish screen engineering and design, to design and oversee construction of this project.

There is good support for this project as evidenced by the financial support provided by the various agencies. The Department of Fish and Game is providing \$1,000,000, the Metropolitan Water District (through CALFED) has designated \$938,875, and the U.S. Bureau of Reclamation has conformed a grant agreement for \$1,916,750. The District hopes that the CALFED committee will continue to recognize the importance of this project and complete the funding necessary to build this facility.

Project Description

Project Description and Approach:

This project will provide a positive barrier fish screen on the Banta-Carbona Irrigation District's (BCID) intake channel leading from the San Joaquin River at River Mile 63.5. Category III funds would be used for completing the financing necessary for gathering pre-construction data, completing the final design of the positive screen barrier, constructing and installing the screen. BCID has arranged for over half the funds necessary to finance this project through grants from the United States Fish and Wildlife Service (USFWS) via CVPLA Restoration Funds (USBR), California Department of Fish and Game (DFG), and CALFED Category III (from Metropolitan Water District contributions).

In 1995, the District obtained a \$45,000 grant from the Department of Interior to obtain a fish screening feasibility study. The final report, "Banta-Carbona Irrigation District, Final Report, Fish Screen Feasibility Study" (FSFS) was completed by Montgomery Watson, January 1996. Based upon the report findings, the recommended alternative was to design and construct a 14 panel vertical screen structure on the District's Intake Canal about two hundred feet downstream from its confluence with the San Joaquin River (see figure 4-9). Each panel would be nominally 6-feet high and 9-feet wide installed in a single vertical vee-configuration, 7 panels to a side. Subsequent to the completion of the original FSFS the USFWS requested the project be re-evaluated using Delta Smelt as the controlling fish species for design criteria and evaluation of the alternatives. In addition, USFWS wanted more detail as to the availability of alternate sources of water that may or may not be accessible by BCID to serve its customers. This re-evaluation was conducted in the form of a supplemental feasibility study at a cost of approximately \$45,000. The new alternative as a result of the new study is a larger facility that can accommodate a larger screening area to meet Delta Smelt screening criteria. This fish screen will now have 11 panels to a side instead of the 7 per side as originally planned (see figure 4-6).

The positive barrier fish screen will be fully consistent with the fish screen criteria for this site as agreed to by the regulatory agencies including the National Marine Fisheries Service, California Department of Fish and Game and the U. S. Fish and Wildlife Service.

When in operation, the fish screen will prevent entrainment of juvenile anadromous fish, specifically fall-run chinook salmon for as long as the next fifty years. The intake channel has been unscreened since commencement of pumping in 1925 excepting a six-year period between 1971 and 1976. The California Department of Fish and Game (F&G) installed and operated a screen those years between the months of February and June. It was not operated in other months. F&G ceased screen operation following the 1976 irrigation season.

F&G abandoned the screen, concluding they had selected the wrong site. It had been constructed at the end of a quarter mile-long settling basin and F&G personnel believe predator fish living in the basin desecrated the migrants in the slow-moving water before they could reach the screen and be trucked to the Sacramento-San Joaquin Rivers Delta. In fact, the settling basin is considered a striped bass haven by sport fishermen. The new facility will be located near the settling basin entrance.

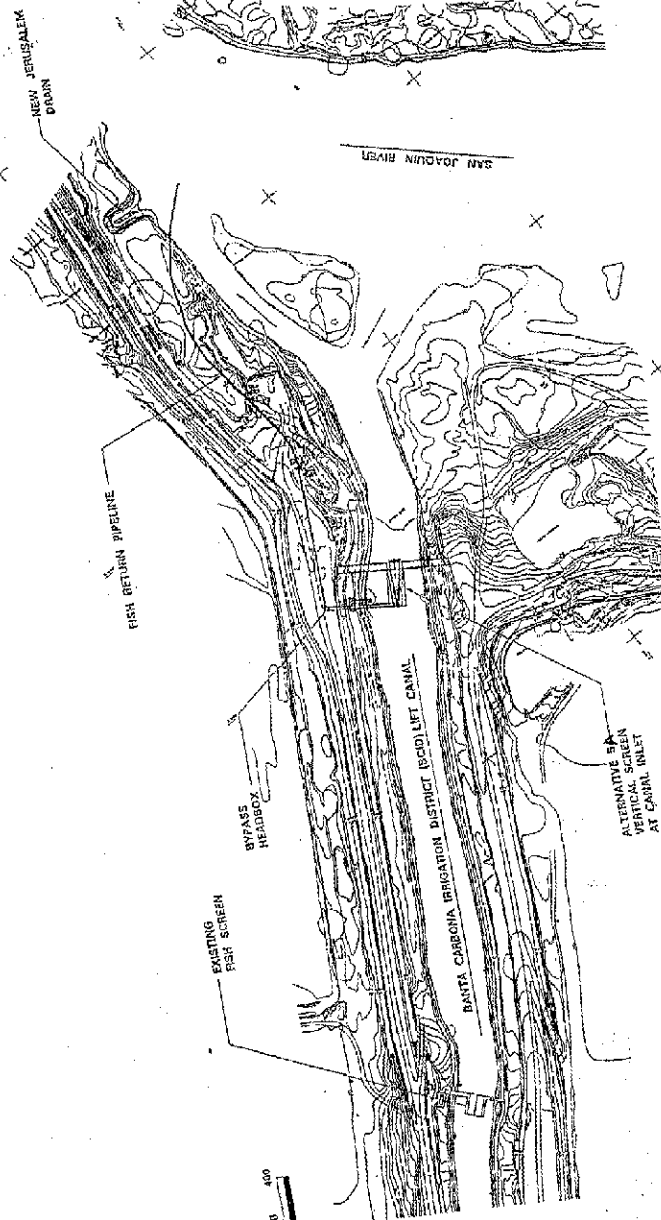
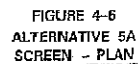


FIGURE 4-9
ALTERNATIVE 5A
OVERALL PLAN

MONTGOMERY WATSON

1-013035

MONTGOMERY WATSON

It is the intention of the Banta-Carbona Irrigation District's Board of Directors to move the project forward with all due diligence. Design planning will be initiated with our contractor, Montgomery Watson as soon as full funding is assured. This could be as early as August 1999. Montgomery Watson will be managing this project from design through construction as well as training BCID staff on the operation and maintenance of the fish screen upon completion.

If able to proceed in August, 1999, Montgomery Watson staff could then have designs 30% completed and ready for review by the end of January, 2000. At 30% designed, BCID, the Department of Fish and Game (DFG), and U.S. Fish and Wildlife (USFW) will review the proposed design to see if it meets the appropriate criteria. After 30% design a working set of plans will be submitted to DFG for comment every two months (or when appropriate) until final designs are completed. Final design should be completed by June 1, 2000. Bidding followed by construction could start immediately and completion should not take more than one and 1/2 years (barring weather uncertainties) including testing and training of District staff to operate and perform minor maintenance activities. Given time for contingencies, this could put project completion at the end of 2001. The project will commence as soon as financing is assured.

The structure will be built within the confines of a leveed channel and will require intake channel dewatering by damming the construction site. The irrigation season ends the first Friday of November each year and usually does not commence prior to mid-March the following year. Construction must occur during this time span. There is the possibility of having an unusually wet year where it would be difficult to provide an upstream diversion dam of sufficient height to prevent work site flooding. Therefore, if a very wet winter should occur, construction would be delayed a year.

Proposed Scope of Work

The BCID General Manager shall provide written status reports to the Project Manager and the Grants and Cooperative Agreements Officer's Representative (GCAOR), both of whom were assigned by USBR, on a monthly basis documenting the project's progress and expenditures through project completion. In addition, CALFED will receive these documents to facilitate their monitoring of the project. Also, at critical milestones, in performance of the work, BCID shall conduct briefings for the USFWS, USBR, DFG, CALFED, and involved regulatory agencies. The purpose of the briefings will be to insure that all regulatory and procedural policies, and biological, engineering, and cost factors associated with the project are understood by the participants and are addressed in the final designs and specifications. Briefings will be performed when:

- (1) alternative concepts are being formulated;
- (2) the designs are approximately 30-35% completed;
- (3) the designs are approximately 90% completed.

In addition, the final draft design and specification package shall be submitted to the Project Manager and the GCAOR. They will review and comment on the design and on any regulatory agency considerations. After approval of final design, all information relative to bid opening and award will be provided to the Project Manager.

The BCID General Manager will provide originals of all reports to the Project Manager, and GCAOR. These reports shall include, but are not limited to, feasibility and cost analyses, construction schedules, engineering reports detailing project alternatives, environmental documents such as initial environmental studies/environmental assessments and environmental impact reports/studies, final designs and specifications detailing the work performed and the total cost of the project, and the as-built drawings and final construction report, and any other hydraulic or biological monitoring plans or reports that may be required by involved agencies for assuring that fish resources are being protected from entrainment during water diversions.

Below is a chart outlining the phases and the approximate periods of activity and completion.

	1999	1999	2000	2000	2000	2000-2001
	3rd Qtr.	4th Qtr.	1st Qtr.	2nd Qtr.	3rd Qtr.	4th-4th Qtr.
1. Complete financing arrangements						
2. Survey and geotechnical						
3. Complete 30% design						
4. Final Design						
5. Permitting/Environmental documents						
6. Bidding period						
7. Construction						

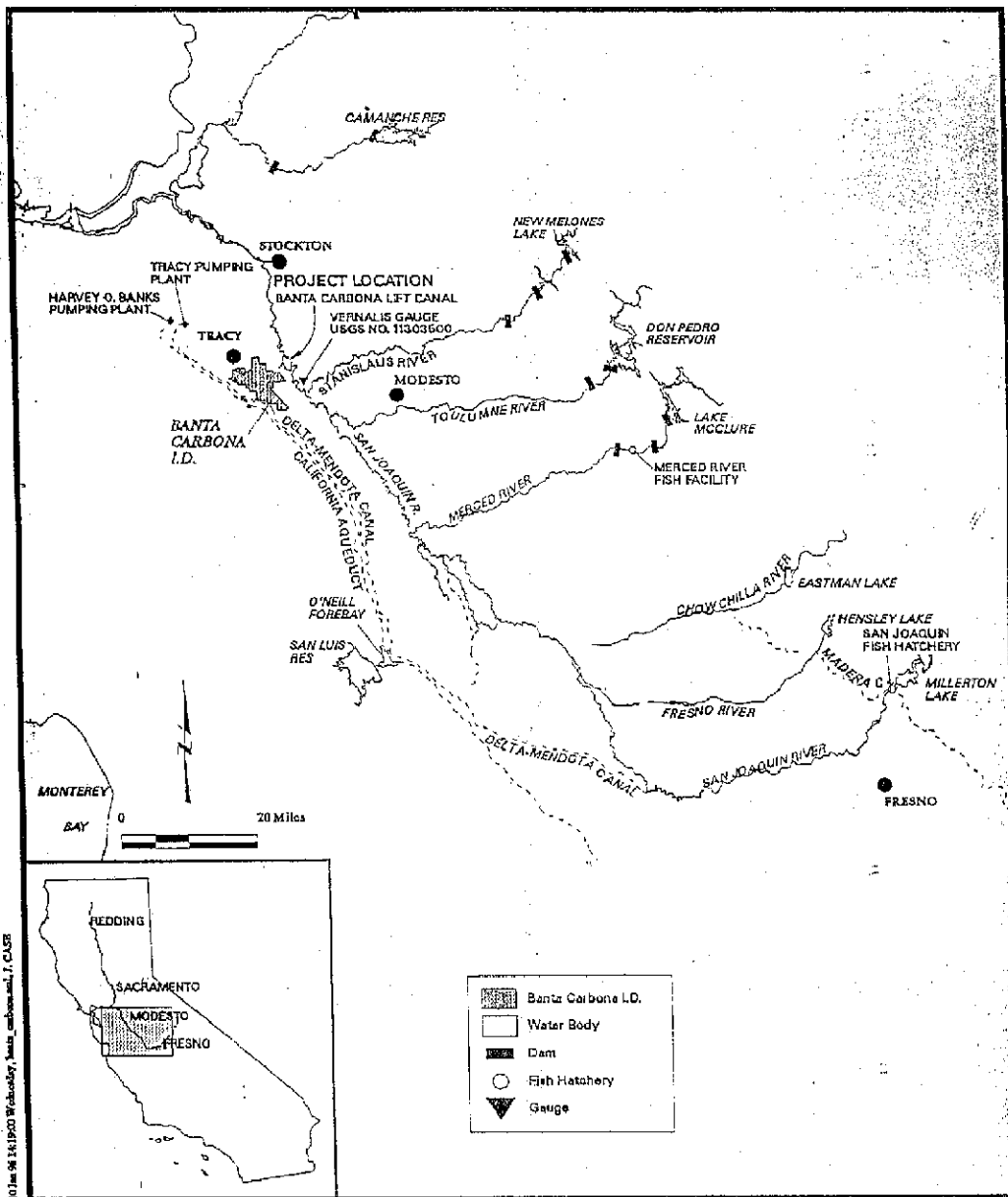
Implementability

Permitting and environmental documents have not been attained as they are a part of the proposed action in this proposal. The land on which the fish screen will be located is owned by BCID, as are the access roads. There is no known local opposition to this proposed facility, or for that fact, any opposition. The only known factors which would effect the construction of this facility would be weather and flood type flows on the San Joaquin River. Excessive rain during the proposed construction time period could delay construction as could flood flows on the river.

Location of Project:

BCID's intake channel is located on the San Joaquin River at River mile 63.5. This is below three San Joaquin River watersheds, the Stanislaus River, the Toulumne River, and the Merced River watersheds (see map, Figure1-1).

The proposed fish screen site is about 8 miles east of Tracy, California, in San Joaquin County, in the NE 1/4 of Section 34, T2SR6E, MDB&M. It is accessible from Interstate 5 by taking the Kasson Road off-ramp and traveling southeast on Kasson Road for approximately three miles. A left turn from Kasson Road onto either the north or south banks of the BCID intake channel and traveling about 1 and 1/4 mile brings the traveler to the site (see figure 2-1).



10 Jan 94 14:19:00 W:\chicago\maps\california\1.1.CASE

Banta Carbone Irrigation District Location Map
Figure 1-1

1-013039

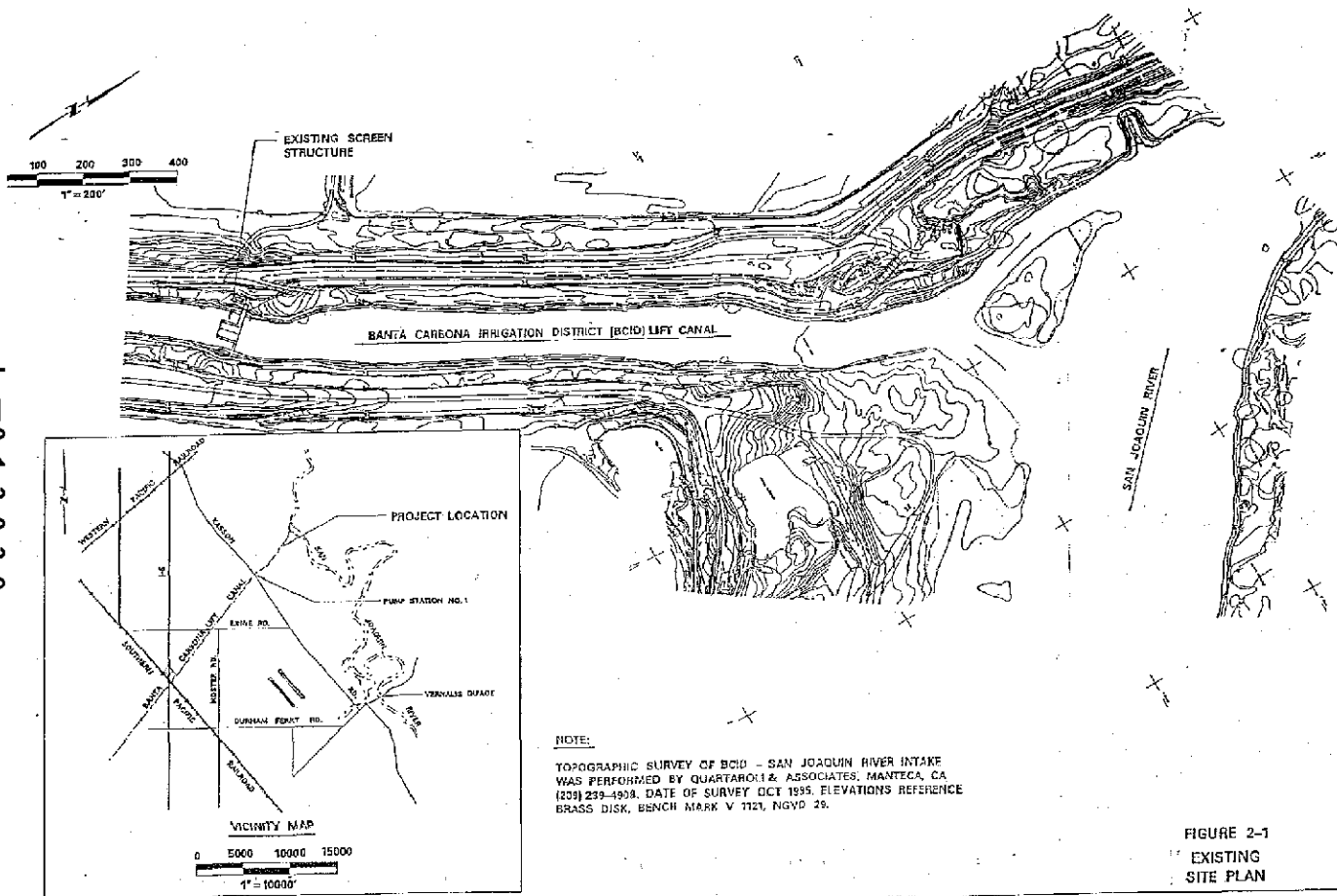


FIGURE 2-1
EXISTING
SITE PLAN

MONTGOMERY WATSON

1-013039

ECOLOGICAL/BIOLOGICAL BENEFITS

Expected Benefits: Protect fish from potential entrainment and predation in BCID intake canal.

Chinook Salmon is the primary target species the proposed fish facility will be designed to protect. Four distinct runs of chinook are present in California's Central Valley streams: fall, late-fall, winter and spring. While all four species were once found in the San Joaquin River, it now supports only a remnant fall-run which the California Department of Fish and Game manages as a genetically distinct stock. The remnant fall-run population numbers have varied widely from year to year depending on the timing and magnitude of river flows. At present, no significant chinook populations exist in the river.

Spawning areas for the fall-run are generally along the lower stream elevations of the San Joaquin River watershed where the District's canal intake is located. Smolt emigration is from January through June. In the last five years, the District has pumped water from the river during all of these critical emigration months although most years will find pumping starting sometime after the middle of March. Therefore, having a fish screen in operation during the fall-run outmigration is considered essential if the chinook salmon population is to be first stabilized then returned to its historical prominence.

Delta Smelt habitat encompasses the area within the boundary of the Delta by legal definition, extending up the San Joaquin river to Vernalis. The District's diversion is about four miles within the legally defined delta area. The California Department of Fish and Game currently monitors delta smelt activity in the San Joaquin river at Mossdale about 6 miles downstream. Little or no sampling has been conducted upstream of Mossdale.

Based on sampling at Mossdale, delta smelt adults can be present in the river from March 1 through June 30. Adults will generally move upstream to spawn in March and will move back downstream as the water temperatures rise. Experience at the Mossdale station indicates the delta smelt will be gone by the time the water temperature reaches 20 C (W. Loudermilk, pers. comm.).

Steelhead has a life cycle similar to chinook salmon. The San Joaquin River once supported steelhead runs, but they too have been reported reduced to remnant levels by water development facilities and general habitat degradation.

Swimming capabilities of steelhead adults and juveniles are similar to those of salmon and therefore the listing of these fish will not affect the design of this facility. The salmonid criteria used to develop the alternatives also apply to steelhead fry

Sacramento Splittail are known to be present in and above the District's intake on the San Joaquin River. Screening approach velocity criteria accepted for splittail is 0.20 fps.

Possible secondary benefits

Several other species besides chinook salmon could also benefit from screened diversions. These species are discussed individually below.

American Shad -- Atlantic coast shad were introduced during the early 1870's but are seldom found in Central Valley streams except during the annual spawning migration which peaks between February and June. Shad spawn over sands and gravels found in Central Valley streams including the lower San Joaquin River. Although this species was more common in the Sacramento River, the San Joaquin River once supported shad migrations and they were avidly sought by fishermen. Shad larvae are less than 1/2" long and generally move with the current to the Sacramento-San Joaquin Rivers Delta where they grow to maturity. They generally are transported to the Delta during the months of April thru early August.

Sturgeon -- Not as much is known about the habits of this anadromous fish and there are only estimates of the San Joaquin River sturgeon spawn. Those estimates indicate that up to 10% of the adult sturgeon use the lower San Joaquin River for their spawning habitat. Spawning occurs from mid-February thru late April. Hatching occurs from two to five days later. Nursery areas extend from the spawning areas to the Sacramento-San Joaquin Rivers Delta.

Striped Bass -- Like the American shad discussed above, striped bass is a late 1800's introduced species from the east coast. Subsequently, they have provided one of California's most valuable sport fisheries.

Spawning normally occurs between April and mid-June with the eggs hatching within two days of the spawn. The young drift with the current back to the Delta. Spawning habitat includes the mainstream San Joaquin River during years of very high flow runoff when the water is of especially high quality. During summer months, the striped bass migrate back to the Delta.

Other Species -- There are other non-anadromous fish species that the proposed fish screen facility may affect positively, however, studies of these species have not been undertaken and therefore screening benefits are unquantified.

Long-term Benefits -- When the Banta-Carbona Irrigation District and other lower San Joaquin River diverters have screened their intakes, it is anticipated the fall-run Chinook Salmon and other depleted fish species mentioned above would have their San Joaquin River populations increased to a point where they would no longer be considered threatened or endangered. While not quantified at this time, the return of these species to commercial abundance will provide significant sport, recreation and commercial fishing benefits to the local and state economies.

Screening the District's intake channel would also ease pressures to cease agricultural water pumping during the critical spawning months which also coincide with the peak agricultural water requirement month of May. When adequate water supplies have been assured, food and fiber producers in the Banta-Carbona Irrigation District can average annual gross crop sales of \$20,000,000±. This has a substantial impact on the local economy in particular and the state economy generally and is in itself worth protecting to provide economical foodstocks for California's burgeoning populace.

Short-term Benefits -- The most immediate short term benefit, particularly if other river intakes near the Banta-Carbona Irrigation District's are also screened within the same time period, would be to stabilize and prevent extermination of those anadromous fishery species populations discussed above that are only remnant populations today. A complete loss of these populations, especially chinook salmon, would be incalculable as to future monetary losses as well as environmental losses to society as a whole.

Food and fiber producers could return to growing high value crops such as vegetables instead of low risk crops as, for example, the grain and oil seed crops grown when water supply uncertainties cause every level of farm interests to reduce risks, including bankers, suppliers and farmers. A screened diversion would ease pressures to stop pumping during spawning migrations of both the adults and juveniles.

Potential Local Community Benefits of Proposed Action:

The Banta-Carbona Irrigation District (BCID) has long-standing (75 years) water rights to divert over 200 cubic feet per second from the San Joaquin River. There have been environmental pressures in the last few years to reopen water rights permits with the implication being that diversion quantities could eventually be reduced. This has brought uncertainty to District water users and their money lenders leading to some cutbacks in higher value and riskier crops because production loans were either cut back or curtailed entirely. Food and fiber producers in the Banta-Carbona Irrigation District have averaged a gross crop production near \$1,500.00 per acre when water supplies are stable. With a fish screen, the certainty of future water supply availability during critical months would result in an immediate, favorable "ripple effect" of increased employment, manufacturers able to sell equipment, and seed, fertilizer, pesticide and other allied industries likewise able to increase sales. Taxes from the increased economy would benefit local governments, enabling them to provide a better living environment for their residents.

Not all the above benefits have been quantified thru studies, nevertheless, there are no known or foreseeable negatives in constructing the fish screen.

Linkages -- This project is being supported by the USFWS/USBR Anadromous Fish Restoration Program, the California Department of Fish and Game through Proposition 204 funds, CALFED and Metropolitan Water District through Category III funds, and Banta-Carbona Irrigation District through project management, operation, and maintenance of the facility. All of these agencies have been working cooperatively and diligently to get this project funded and started.

Even though it appears that this project cannot be linked directly to any specific target in the ERP, as this area (Vernalis to Mossdale) of the San Joaquin River has been left out of all of the identified Ecological Management Zones by definition, it would reduce entrainment of fish into diversions as similarly described by **Target 1, page 402 of Volume II of the ERPP**.

Note: On page 54 of Volume II, the Sacramento-San Joaquin Delta Ecological Management Zone Southern boundary is given as Mossdale and on page 385 of Volume II the northern boundary of the San Joaquin River Ecological Management Zone is given as Vernalis. There isn't any comment, vision, or targets given for this stretch of river between Vernalis and Mossdale in the ERPP that BCID could find.

TECHNICAL FEASIBILITY AND TIMING

In the end, twelve alternatives were examined for reducing predation and entrainment at the BCID diversion on the San Joaquin River.

1. Incline Canal Screen, re-activating old DFG facility - **Unacceptable** because of predation in ¼ mile long settling basin located in front of screens.
2. Vertical Canal Screen in Vee shape using old DFG facility – **Unacceptable**, predation in front of screens.
3. River Screen, salmonoid criteria, **Unacceptable**, encroaches to far out into river at this location restricting flood flows, and is located in a natural deposition area requiring frequent dredging to maintain correct velocities in front of screens.
- 3A. River Screen, delta smelt criteria – **Unacceptable**, same reasons as Alternative 3.
- 3B. River Screen, delta smelt criteria located at a new diversion point 4,000 feet upstream. Good location, but costs nearly \$9,000,000 to protect a fish, delta smelt, which may very seldom be present, if ever. **Was considered cost prohibited.**
4. Vertical Screens at Pump Station – **Unacceptable** - entire 1 mile length of intake canal would be predation area.
5. Vertical Screen at Canal Inlet, salmonoid criteria – **Unacceptable** for delta smelt criteria. This was the preferred alternative that funding was originally sought for in 1997.
- 5A. Vertical Screen at Canal Inlet, delta smelt criteria, with Hidrostral bypass pump. This is now the preferred alternative that the additional funding is being sought for.**
- 5A. Vertical Screen at Canal Inlet, delta smelt criteria, with Archimedes bypass pump. Same screening area as above Alternative 5A but with more expensive bypass pump, \$1,743,000 more. Considered cost prohibitive to protect a fish which may not be present.

Alternative Water Supplies:

CVP full supply to meet district needs. **Unacceptable.** Requires \$28,000,000 for constructing distribution facilities within BCID in order to use the water. Also worsens the fishery impacts to the CVP pumping plant and potentially negatively impacts other CVP contractors south of the Delta.

CVP supply to reduce river diversion and build Vertical Screen with salmonoid criteria. Requires \$6,700,000 in water distribution improvements within BCID and \$4,000,000 to design and build the Vertical Vee Screen at the river. Also would negatively impact other CVP contractors south of the Delta.

No Action Alternative – Doesn't protect fish from predation in the intake canal nor prevent potential entrainment by lift pumps.

MONITORING AND DATA COLLECTION METHODOLOGY

Monitoring and data collection will be determined during the development of the operating criteria for the facility in consultation with the appropriate governing agencies while designing the fish screen. It is unknown at this time the precise methodology that would be appropriate for this facility.

LOCAL INVOLVEMENT

As this project has been four years in the making, many people have become aware of it through word of mouth and the local newspaper, The Stockton Record. A letter has been composed and is being sent to the groups as outlined in the solicitation package. A copy of that letter is included with this proposal.

Adjacent landowners serve to benefit by the project through a more reliable surface water supply and shouldn't be affected by its presence in the intake canal except in a positive way. The facility will be located on BCID property and accessed by BCID maintenance roads owned by BCID. A public outreach program hasn't been planned, as such, except for noticing requirements for any environmental documents needed.

COSTS AND COST SHARING

Budget Costs

The table below outlines the funds necessary for the construction of the fish screen.

ITEM	Estimated Cost (2000 \$)
Fish Screen Structure	\$2,903,000.00
Bypass System	\$315,000.00
Fish Return Pipeline and River Outlet	\$358,000.00
Electrical and Control	\$354,000.00
Mobilization and Demobilization	\$270,000.00
General Conditions, Bonds, and Insurance	\$178,000.00
Subtotal Construction Cost	\$4,378,000.00
Engineering, Administration, Environmental Permitting	\$1,227,000.00
Total Design and Construction Cost	\$5,605,000.00

BCID sources of all funds for design and construction are detailed in the following table.

Banta-Carbona Irrigation District			
Fishscreen - Alternative 5 - Vertical Screen at Canal Inlet			
	State	Federal	
Source of Fishscreen Funds	Amount	Amount	TOTAL
CVPIA Funds-Grant		\$1,916,750.00	\$1,916,750.00
CAT III Grant - CAL-FED & MWD	\$938,875.00		\$938,875.00
Prop 70 Grant - Ca.DF&G	\$55,000.00		\$55,000.00
Prop. 204 Funds-Ca. DF&G	\$1,000,000.00		\$1,000,000.00
This Application & Proposal			\$1,694,375.00
TOTAL	\$1,993,875.00	\$1,916,750.00	\$5,605,000.00

- 1) The \$1,916,750 from the USBR is an executed agreement and the funds are available to be spent.
- 2) BCID has signed an agreement with DFG for \$100,000, and has spent \$45,000 of that grant on the supplemental study completed in March 1999. There is \$55,000 left in that grant for application for some topographic work, environmental work and to be put towards the final design of the fish screen.
- 3) The Cat III money of \$938,875 from Metropolitan Water District is yet to be consumated. This contract will be executed by BCID and MWD when all funds necessary to complete the project have been identified.
- 4) The **\$1,694,375** applied for in this proposal is necessary to complete the design and construction of the fish screen.
- 5) Banta-Carbona Irrigation District will be operating and maintaining the fish screen facility throughout its useable life of fifty years. BCID will be paying the estimated annual O&M expense of approximately \$92,000 per year (in year 2000 \$).

BCID would need the proposed funding of \$1,694,375 for design and construction available at the time of an executed agreement between CALFED and BCID. The reason being is that BCID is required by its USBR funding agreement to equally distribute its expenses among all funding sources so that the federal share doesn't exceed 50% of the project costs throughout the term of the project agreement. Also, BCID proposes to draw on funds from CALFED in the same manner as required by USBR and that is by being reimbursed for accomplished work based upon bills and documentation in sufficient detail as to permit review and analysis of costs incurred by BCID. Cost items shall include, but not be limited to category and hours of labor expended, material and supply costs, other direct and indirect costs. The documentation shall also include a breakdown of the costs assigned to or incurred by each cost share participant during the invoice period.

The schedule of events would be as follows.

	1999	1999	2000	2000	2000	2000-2001
	3rd Qtr.	4th Qtr.	1st Qtr.	2nd Qtr.	3rd Qtr.	4th-4th Qtr.
1. Complete financing arrangements						
2. Survey and geotechnical						
3. Complete 30% design						
4. Final Design						
5. Permitting/Environmental documents						
6. Bidding period						
7. Construction						

Below is the estimated O&M functions and annual cost which BCID will be responsible for paying and conducting. BCID will be providing the labor and funds for these annual expenses.

O&M Estimated Annual Cost				
Item	Unit	Labor Rate	Quantity	Annual Cost
O&M Labor				
Routine Inspection	Hr	\$65.00	318	\$20,670.00
Monthly Maintenance	Hr	\$65.00	280	\$18,200.00
Annual Facility Maintenance	Hr	\$65.00	100	\$6,500.00
Subtotal Labor				\$45,370.00
O&M Materials and Equipment				
Routine Inspection	Yr		1	\$0.00
Monthly Maintenance	Yr		1	\$1,190.00
Annual Facility Maintenance	Yr		1	\$27,225.00
Subtotal Materials and Equipment				\$28,415.00
Power Usage				
	hr/Yr	\$/MHW		
Pumping	MWH/YR	\$30.00	536	\$16,080.00
Miscellaneous Site	MWH/YR	\$30.00	112	\$3,366.00
Subtotal Power				\$19,446.00
Total Annual Cost				\$93,231.00

Applicant Qualifications

There are a diverse group of people involved with this project because of the number of entities participating in it. This will allow for all aspects of the project to be monitored in an all encompassing way, protecting the public's interests as well as developing a quality product. Because there are representatives from the State and Federal Agencies involved as project managers, there will be a wealth of knowledge to draw upon to provide BCID with a state of the art fish screen. Also, BCID's engineering consultant firm of Montgomery Watson has a considerable amount of experience with the development of fish screens on the west coast.

Below is a list of those people and the entity they are associated with that will be participating in this project.

David Weisenberger
General Manager
Banta-Carbona Irrigation District
P.O. Box 299
Tracy, California 95378-0299
Phone: 209-835-4670
Fax: 209-835-2009
E-mail: BCID@aol.com

Ron Bachman
Project Manager
U.S. Fish and Wildlife Service
Central Valley Fish & Wildlife Restoration Program
3301 El Camino Avenue, Suite 130
Sacramento, California 95821-6340
Phone: 916-979-2760

Ronald Brockman
GCAOR
U.S. Bureau of Reclamation
Mid-Pacific Region
2800 Cottage Way, MP-401
Sacramento, CA 95825
Phone: 916-979-2323

William Loudermilk
Contact person on the Prop 204 Funds
Calif. Department Of Fish and Game
Fresno Office
1234 East Shaw
Fresno, CA 93710
Phone: 209-243-2005

Clarence Mayotte
Contact Person on Proposition 70 Funds
Calif. Department of Fish and Game
Fresno Office
1234 East Shaw
Fresno, CA 93710
Phone: 209-222-3761

Neil Schild, P.E.
Principal Engineer
Montgomery Watson
777 Campus Commons Road
Sacramento, CA 95825
Phone: 916-924-8844
Fax: 916-924-9102

Standard Terms and Conditions

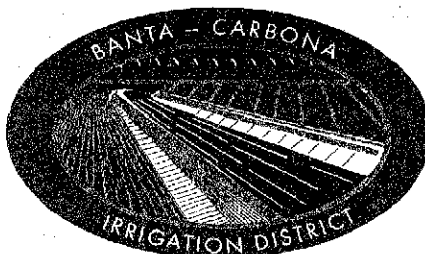
Please find attached those documents required to be submitted with this proposal.

OFFICERS

James M. McLeod
President
Clifford Robertson
Vice-President

Virginia Hudson
Secretary-Treasurer
Assessor-Collector

David Weisenberger
General Manager



DIRECTORS

James M. McLeod
Clifford E. Robertson
Charles Alcock
James Thoming
Roger Elissagaray

Attorney
John Rudquist
of
Bray, Geiger
Rudquist & Nuss

3514 West Lehman Road • P.O. Box 299 • Tracy, California 95378-0299
Phone (209) 835-4670 • FAX (209) 835-2009

April 15, 1999

Clerk of the Board of Supervisors
San Joaquin County
Courthouse, Room 701
222 East Weber Avenue
Stockton, California 95202

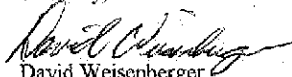
Dear Honorable Board,

Banta-Carbona Irrigation District (BCID) would like to hereby inform San Joaquin County of BCID's plans to construct a Positive Barrier Fish Screen on BCID's Intake Canal on the San Joaquin River south of Mossdale at River Mile 63.5. The BCID has taken steps to procure funding for this project through various sources including CALFED. The primary purpose of this facility is to protect anadromous fish species, specifically Chinook Salmon. In addition to Salmon, Delta Smelt, Steelhead, and Sacramento Splittail will be protected from entrainment and predation in the BCID Intake Canal.

In addition to the benefits to the environment the BCID believes that this project will be very beneficial to San Joaquin County and more particularly the southwest portion of the county in providing for a more reliable supply of surface water to farmers. By protecting the surface water supply this will in turn protect groundwater supply in the area. This will benefit local residents as well as the City of Tracy.

The BCID encourages the County of San Joaquin to support this project whenever opportunities to do so arise. Thank you for that support in advance.

Sincerely,

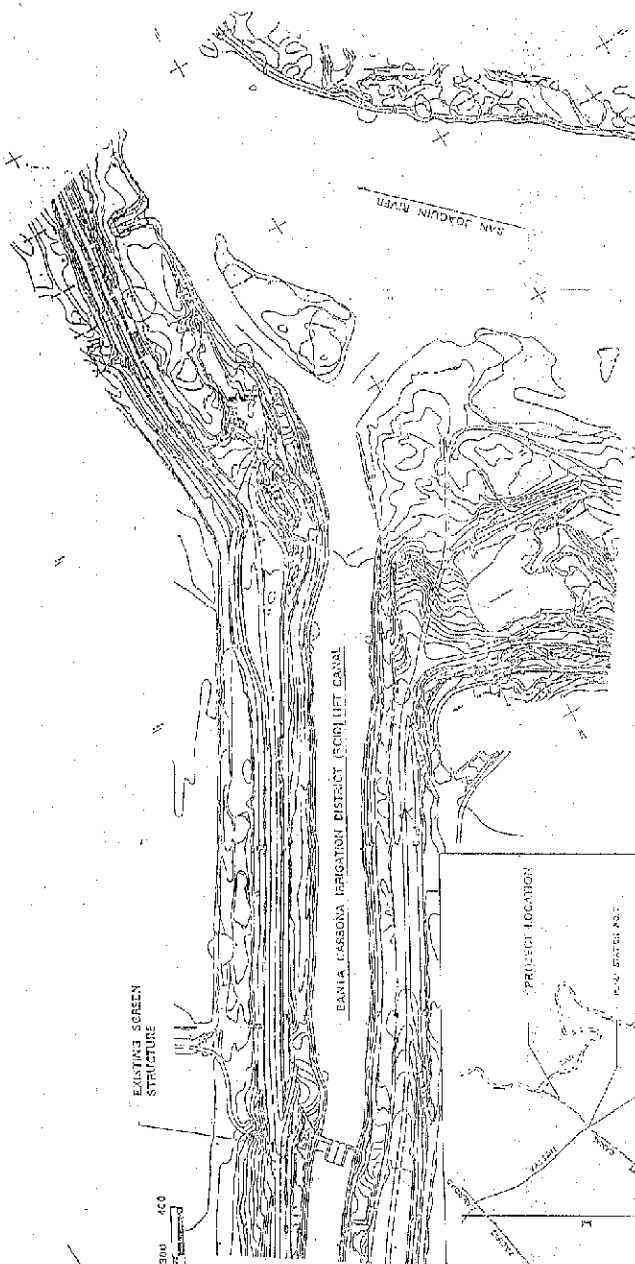

David Weisenberger
General Manager

cc: Delta Protection Commission
P.O. Box 530
Walnut Grove, California 95690

Senior Planner
San Joaquin County
Community Development Department
1810 E. Hazelton Avenue
Stockton, California 95205-6232

Reclamation District 2085
Mr. Andy Rustan
603 E. Critchett Road
Tracy, California 95376

Reclamation District 2095
Mr. David Pellegri
P.O. Box 122
Banta, California 95304



NOTE:

TOPOGRAPHIC SURVEY OF EICD - SAN JOAQUIN RIVER INTAKE
 WAS PERFORMED BY QUADRAHOLL & ASSOCIATES, MARIPOSA, CA
 PER 228-332. DATE OF SURVEY OCT. 1955. ELEVATIONS REFERENCE
 BEARS DIST. ENGINEER MARK Y 421, HWD 2.

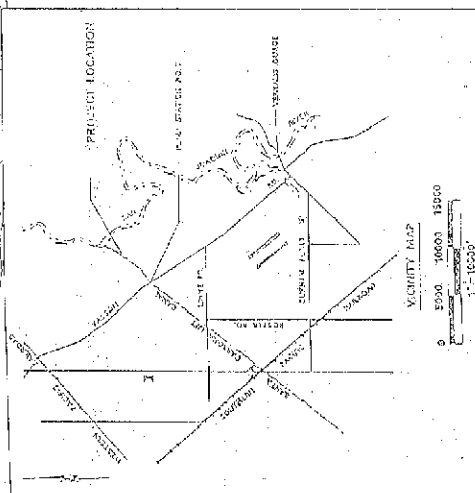


FIGURE 2-1
 EXISTING
 SITE PLAN

EXISTING WATER

1-013053

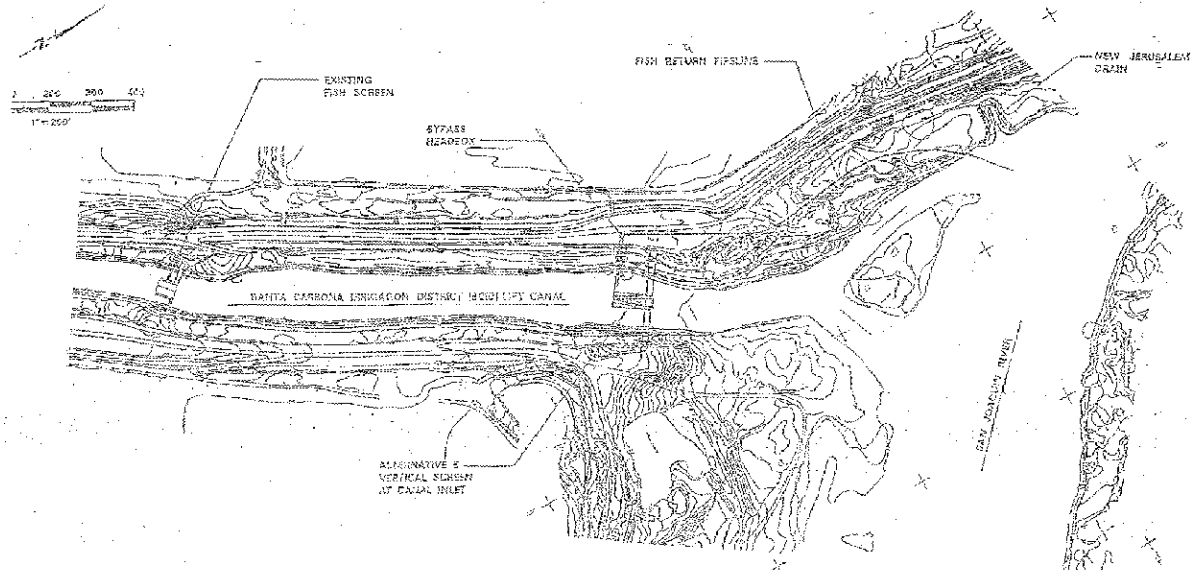


FIGURE 4-6
ALTERNATIVE 5
OVERALL PLAN

PROF. GORDON WATSON

1-013053